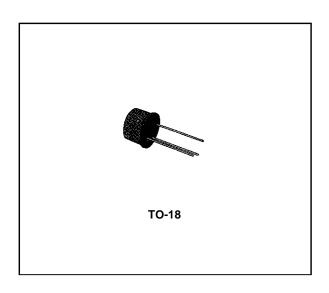
BC107 BC108-BC109

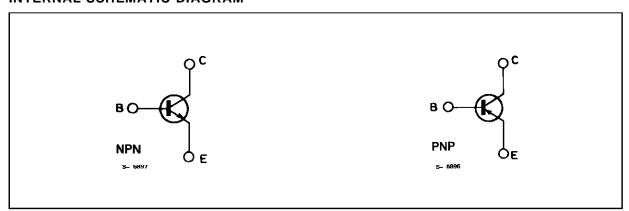
LOW NOISE GENERAL PURPOSE AUDIO AMPLIFIERS

DESCRIPTION

The BC107, BC108 and BC109 are silicon planar epitaxial NPN transistors in TO-18 metal case. They are suitable for use in driver stages, low noise input stages and signal processing circuits of television receivers. The complementary PNP types are respectively the BC177, BC178 and BC179.



INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Unit		
	Farameter	BC107	BC108	BC109	Unit
V_{CBO}	Collector-base Voltage (I _E = 0)	50 30 30		V	
V_{CEO}	Collector-emitter Voltage (I _B = 0)	45 20 20		20	V
V_{EBO}	Emitter-base Voltage (I _C = 0)	6	5	5	V
Ic	Collector Current	100			mA
P _{tot}	Total Power Dissipation at $T_{amb} \le 25$ °C at $T_{case} \le 25$ °C	0.3 0.75			W W
T _{stg}	Storage Temperature	– 55 to 175			°C
Tj	Junction Temperature	175			°C

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THERMAL DATA

Ī	R _{th j-case}	Thermal Resistance Junction-case	Max	200	°C/W
ı	R _{th j-amb}	Thermal Resistance Junction-ambient	Max	500	°C/W

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25 \, ^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test (Min.	Тур.	Max.	Unit	
I _{CBO}	Collector Cutoff Current (I _E = 0)	for BC107 $V_{CB} = 40 \text{ V}$ $V_{CB} = 40 \text{ V}$ $T_{amb} = 150 \text{ °C}$ for BC108-BC 109 $V_{CB} = 20 \text{ V}$ $V_{CB} = 20 \text{ V}$ $T_{amb} = 150 \text{ °C}$				15 15 15 15	nA μA μA μA
V _{(BR)CBO}	Collector-base Breakdown Voltage (I _E = 0)	I _C = 10 μA	for BC107 for BC108 for BC109	50 30 30			V V V
V _{(BR)CEO} *	Collector-emitter Breakdown Voltage (I _B = 0)	I _C = 10 mA	for BC107 for BC108 for BC109	45 20 20			V V V
V _{(BR)EBO}	Emitter-base Breakdown Voltage (I _C = 0)	I _E = 10 μA	for BC107 for BC108 for BC109	6 5 5			V V V
V _{CE(sat)} *	Collector-emitter Saturation Voltage	I _C = 10 mA I _C = 100 mA	$I_B = 0.5 \text{ mA}$ $I_B = 5 \text{ mA}$		70 200	250 600	mV mV
V _{BE} *	Base-emitter Voltage	$I_C = 2 \text{ mA}$ $I_C = 10 \text{ mA}$	$V_{CE} = 5 V$ $V_{CE} = 5 V$	550	650 700	700 700	mV mV
V _{BE(sat)} *	Base-emitter Saturation Voltage	$I_C = 10 \text{ mA}$ $I_C = 100 \text{ mA}$	$I_B = 0.5 \text{ mA}$ $I_B = 5 \text{ mA}$		750 900		mV mV
h _{FE} *	DC Current Gain	$I_C = 2 \text{ mA}$ $I_C = 10 \mu\text{A}$	VCE = 5 V for BC107 for BC107 Gr. A for BC108 for BC108 Gr. A for BC108 Gr. B for BC108 Gr. C for BC109 Gr. B for BC109 Gr. C VCE = 5 V for BC107 Gr. A for BC107 Gr. A for BC108 Gr. C for BC108 Gr. C for BC108 Gr. C for BC108 Gr. C for BC108 Gr. A for BC108 Gr. C for BC109 Gr. B	110 110 200 110 110 200 420 200 200 420 40 40 40 40 100	230 180 290 350 180 290 520 350 290 520 120 90 150 120 90 150 270	450 220 450 800 220 450 800 450 800	

^{*} Pulsed: pulse duration = 300 μs, duty cycle = 1 %.



ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Conditions		Min.	Тур.	Max.	Unit
h _{fe}	Small Signal Current Gain	$I_C = 2 \text{ mA}$ f = 1 kHz	$V_{CE} = 5 V$				
			for BC107		250		
			for BC107 Gr. A		190		
			for BC107 Gr. B		300		
			for BC108		370		
			for BC108 Gr. A		190		
			for BC108 Gr. B		300		
			for BC108 Gr. C for BC109		500		
			for BC109 Gr. B		370 300		
			for BC109 Gr. C		550		
		$I_C = 10 \text{ mA}$	V _{CE} = 10 V		330		
		f = 100 MHz	7 GE 10 7		2		
C _{CBO}	Collector-base	$I_E = 0$	$V_{CB} = 10 V$		_	•	pF
	Capacitance	f = 1 MHz			4	6	
C _{EBO}	Emitter-base	$I_C = 0$	$V_{EB} = 0.5 V$				_
	Capacitance	f = 1 MHz			12		pF
NF	Noise Figure	$I_C = 0.2 \text{ mA}$	$V_{CE} = 5 V$				
		$R_g = 2 k\Omega$	f = 1 kHz				
		B = 200 Hz	(DO407			4.0	ı.
			for BC107		2 2	10	dB
			for BC108 for BC109		 1.5	10 4	dB dB
		$I_{\rm C} = 0.2 \rm mA$	V _{CE} = 5 V		1.5	4	ub
		$R_q = 2 k\Omega$	VCE - 5 V				
		f = 10 Hz to 10) kHz				
		B = 15.7 kHz					
			for BC109		1.5	4	dB
h _{ie}	Input Impedance	$I_C = 2 \text{ mA}$ f = 1 kHz	$V_{CE} = 5 V$				
		= N Z	for BC107		4		kΩ
			for BC107		3		kΩ
			for BC107 Gr. B		4.8		kΩ
			for BC108		5.5		kΩ
			for BC108 Gr. A		3		kΩ
			for BC108 Gr. B		4.8		kΩ
			for BC108 Gr. C		7		kΩ
			for BC109		5.5		kΩ
			for BC109 Gr. B		4.8		kΩ
			for BC109 Gr. C		7		kΩ

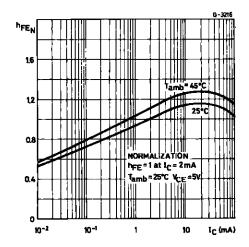
^{*} Pulsed: pulse duration = 300 μ s, duty cycle = 1 %.

ELECTRICAL CHARACTERISTICS (continued)

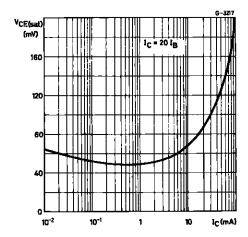
Symbol	Parameter	Test	Conditions	Min.	Тур.	Max.	Unit
h _{re}	Reverse Voltage Ratio	I _C = 2 mA f = 1 kHz	V _{CE} = 5 V				
			for BC107		2.2x10 ⁻⁴		
			for BC107 Gr. A		1.7x10 ⁻⁴		
			for BC107 Gr. B		$2.7x10^{-4}$		
			for BC108		$3.1x10^{-4}$		
			for BC108 Gr. A		1.7x10 ⁻⁴		
			for BC108 Gr. B		2.7x10 ⁻⁴		
			for BC108 Gr. C		3.8×10^{-4}		
			for BC109		3.1×10^{-4}		
			for BC109 Gr. B		2.7×10^{-4}		
			for BC109 Gr. C		3.8x10 ⁻⁴		
h _{oe}	Output Admittance	$I_C = 2 \text{ mA}$	$V_{CE} = 5 V$				
		f = 1 kHz					
			for BC107		20		μS
			for BC107 Gr. A		13		μS
			for BC107 Gr. B for BC108		26 30		μS
			for BC108 Gr. A		13		μS
			for BC108 Gr. B		26		μS
			for BC108 Gr. C		34		μS μS
			for BC109		30		μS μS
			for BC109 Gr. B		26		μS
			for BC109 Gr. C		34		μS

^{*} Pulsed: pulse duration = 300 μ s, duty cycle = 1 %.

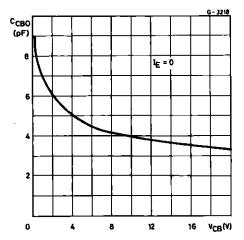
DC Normalized Current Gain.



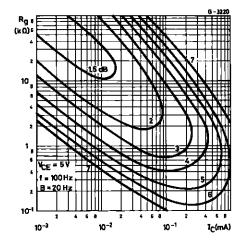
Collector--emitter Saturation Voltage.



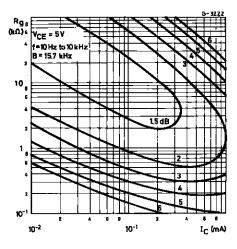
Collector-base Capacitance.



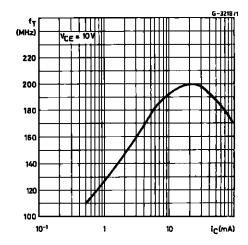
Noise Figure (for **BC 109** only).



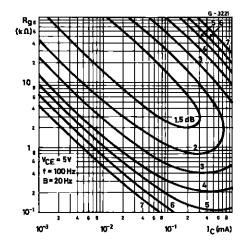
Noise Figure (for BC 109 only).



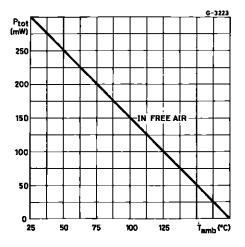
Transition Frequency.



Noise Figure (for **BC 109** only).

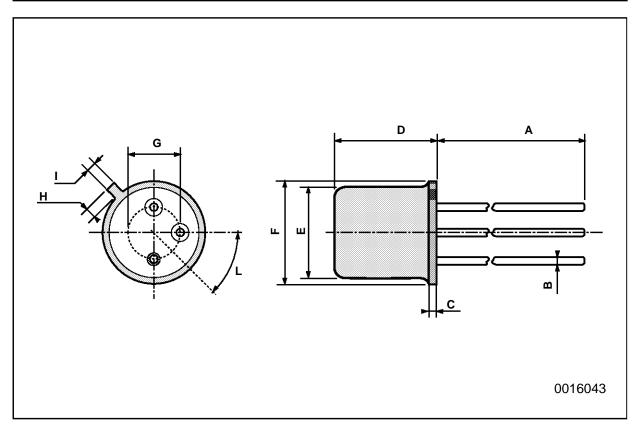


Power Rating Chart.



TO-18 MECHANICAL DATA

DIM.	mm			inch			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Α		12.7			0.500		
В			0.49			0.019	
D			5.3			0.208	
E			4.9			0.193	
F			5.8			0.228	
G	2.54			0.100			
Н			1.2			0.047	
I			1.16			0.045	
L	45°			45°			



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